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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,041	07/14/2003	Kazuya Kimura	ONDA-0009	6062

7590 10/27/2004
KNOBLE & YOSHIDA, LLC
Eight Penn Center
Suite 1350
1628 John F. Kennedy Blvd.
Philadelphia, PA 19103

EXAMINER

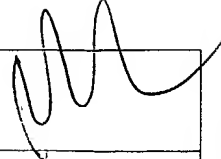
SAYOC, EMMANUEL

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 10/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/619,041	Applicant(s) KIMURA ET AL. 	
	Examiner Emmanuel Sayoc	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10-16, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 5-9 and 17-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/14/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title should refer to at least the principle inventive concept of the claimed invention.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. (U.S. 6,619,933) and in further view of Patyk et al. (U.S. 5,939,807).

With respect to claims 1, 3, 12, 13, Saito et al. in Figure 1, teaches a scroll compressor for refrigerant fluid, comprising a housing (100, 51, 52) having an outer surface, an electric motor (80), and a compression mechanism (61, 62, 71) accommodated in the housing. The compression mechanism (61, 62, 71) is driven by the motor (80) to compress refrigerant. An inverter (2) is attached to the surface of the housing. The inverter drives the motor and includes switching devices (obvious but not shown, see section on "Description of Related Art").

The Saito et al. device differs from the claimed invention in that there is no explicit teaching of a groove formed in the outer surface of the housing and having a wall, wherein the switching device is inserted in the groove.

Patyk et al. in Figure 2, teaches an electric motor with a modular housing. End cap module (20) houses an inverter circuit (76) with switching elements (90). As seen in Figure 5a, the end cap module (20) includes a groove with a wall (92, 138) on an external surface of the end cap (20). The switching device (20) is inserted in the groove (92, 138). Patyk et al. teaches that this configuration is modular for ease in assembly, and compact – see Abstract.

Combining this modular teaching of the circuit within the end cap, (with the switch in the end cap grooves) to Saito et al. would have been readily obvious since the inverter circuitry in Saito is also located in an extreme end of the compressor. A modular end cap would be advantageous for assembly purposes. The cooling via the refrigerant passage (8) and the heat sink (102, 106) would still be preserved.

Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to modify the Saito et al. device by incorporating the modular end cap with the integrated inverter circuit (with the switch in the end cap grooves), as taught by Patyk et al.,

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in order to achieve a design that is modular for ease in assembly, and compact. The heat radiating surface of the switch devices (90) obviously contact the walls of the grooves. The end cap (20) serves as a retainer for retaining the inverter.

With respect to claim 2, a pressure applying body (Patyk et al. Fig. 5a, 136) presses the switching device toward the wall of the groove.

With respect to claim 4, the integration assembly involves a manufacturing process that holds no patentable weight in the apparatus claim.

With respect to claim 10, the pad (94, 96) constitutes an elastic sheet arranged between the heat radiating surface of the switch (90) and the wall of the groove.

With respect to claim 11, it is obvious that the refrigeration compressor is used with an external refrigeration circuit. The compressor includes a refrigeration fluid inlet (8) and an outlet (67).

5. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda (U.S. 6,619,933 B2) and in further view of Patyk et al. (U.S. 5,939,807), and Schneider et al. (U.S. 5,491,370).

With respect to claims 14, Ikeda in Figure 1, teaches a scroll compressor for refrigerant fluid, comprising a cylindrical housing (100, 51, 52) having an outer surface, an electric motor (80), and a compression mechanism (61, 62, 71) accommodated in the housing. The compression mechanism (61, 62, 71) is driven by the motor (80) to compress refrigerant. An inverter (2) is attached to the surface of the housing. The inverter drives the motor and includes switching devices (obvious but not shown, see section on "Description of Related Art").

The Ikeda device differs from the claimed invention in that there is no explicit teaching of a groove formed in the outer surface of the housing and having a wall, wherein the switching device is inserted in the groove.

Patyk et al. in Figure 2, teaches an electric motor with a modular housing. End cap module (20) houses an inverter circuit (76) with switching elements (90). As seen in Figure 5a, the end cap module (20) includes a groove with a wall (92, 138) on an external surface of the end cap (20). The switching device (20) is inserted in the groove (92, 138). Patyk et al. teaches that this configuration is modular for ease in assembly, and compact – see Abstract.

Combining this modular teaching of the circuit within the end cap, (with the switch in the end cap grooves) to Ikeda would have been readily obvious since the inverter circuitry in Saito is also located in an extreme end of the compressor. A modular end cap would be advantageous for assembly purposes. The cooling via the refrigerant passage (8) and the heat sink (1b) would still be preserved.

Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to modify the Ikeda device by incorporating the modular end cap with the integrated inverter circuit (with the switch in the end cap grooves), as taught by Patyk et al., in order to achieve a design that is modular for ease in assembly, and compact. The heat radiating surface of the switch devices (90) obviously contact the walls of the grooves. The end cap (20) serves as a retainer for retaining the inverter.

The Ikeda device differs from the claimed invention in that there is no explicit teaching of the device including a plurality of cylindrical electrolysis capacitors where the central axis of the capacitor is parallel to the central axis of the cylindrical wall housing.

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The Ikeda et al. device includes a drive capacitor (11), which is not explicitly called an electrolysis capacitor. The central axis of the capacitor (11) is parallel to the central axis of the cylindrical wall housing (100, 51, 52). It was well known within the art to use electrolysis capacitors to smoothen the voltage supply to the DC motor. Schneider et al. in Figure 2, teaches an electric motor with a plurality of electrolysis capacitors (222) positioned parallel to the axis of the motor housing, as in the Ikeda reference.

Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to further modify the Ikeda, as modified by Patyk et al., device by incorporating the externally mounted, housing axis parallel oriented, electrolysis capacitors, as taught by Schneider et al., in order to smoothen the voltage supply to the DC motor.

With respect to claim 15, in the combination above, the capacitors (Schneider et al. 222) are arranged in a line along a circumferential direction of the cylindrical housing wall (Ikeda 100, 51, 52).

With respect to claim 16, member (Schneider et al. 247, 246) constitutes a capacitor holder where the capacitors (Schneider et al. 222) are held between the capacitor holder (Schneider et al. 247, 246) and the wall (Ikeda 100, 51, 52).

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda as modified by Patyk et al. and Schneider et al., as applied to claim 14, and in further view of Nakatani et al. (U.S. 6,060,150).

Ikeda as modified by Patyk et al. and Schneider et al., sets forth a device as described above, which is substantially analogous to the claimed invention. The Ikeda as modified by

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Patyk et al. and Schneider et al., device differs from the claimed invention in that there is no explicit teaching of an elastic sheet arranged between the capacitors and the cylindrical wall. In heat generating semiconductors and circuits, it was well known in the art to use thermally conductive sheets to support electronic elements and also enhance heat dissipation through the support structures. Nakatani et al. (see invention summary) teaches such a thermal sheet. Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to further modify the Ikeda as modified by Patyk et al. and Schneider et al., device by incorporating the elastic thermal sheet, as taught by Nakatani et al., in order support electronic elements and also enhance heat dissipation through the support housing structures.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. as modified by Patyk et al., as applied to claim 1, and in further view of Nakatani et al.

Saito et al. as modified by Patyk et al., sets forth a device as described above, which is substantially analogous to the claimed invention. The Saito et al. as modified by Patyk et al., device differs from the claimed invention in that there is no explicit teaching of an elastic sheet arranged between the switch elements and the groove wall. In heat generating semiconductors and circuits, it was well known in the art to use thermally conductive sheets to support electronic elements and also enhance heat dissipation through the support structures. Nakatani et al. (see invention summary) teaches such a thermal sheet. Therefore it would have been obvious to one of ordinary skill in the art at time the invention was made to further modify the Saito et al. as modified by Patyk et al., device by incorporating the elastic thermal sheet, as taught by Nakatani

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et al., in order support electronic elements and also enhance heat dissipation through the support housing structures.

Allowable Subject Matter

8. Claims 5-9, and 17-19, objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited to further show the state of the art with respect to scroll compressors.

U.S. Pat. 6,175,171 B1 to Rupp et al.

U.S. Pat. 6,488,475 B2 to Murata et al.

U.S. Pat. 6,081,056 to Takagi et al.

U.S. Pat. 5,969,445 to Horiuchi et al.

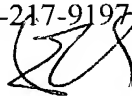
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Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Sayoc whose telephone number is (703) 305-0054 till 11/15/2004, and (571) 272-4832 after 11/15/2004. The examiner can normally be reached on M-F 8 A.M. - 6 P.M..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached (703) 306-2772. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Emmanuel Sayoc
Examiner
Art Unit 3746

ECS



DENISE L. ESQUIVEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700